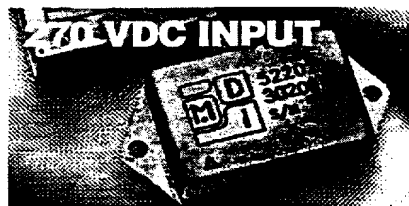


4-6.5 Watt HYBRID

RAD HARD DC-DC CONVERTERS

FULL FEATURE SERIES 3020R



AVAILABLE WITH OR WITHOUT FLANGES

Features

- Specifically designed for redundant or individual space applications
- Completely self contained Thick Film Hybrid DC-DC Converter
- No external filter caps required
- Fully isolated design
- Operates from 200 VDC to 335 VDC for MIL-STD 704 applications
- T²L inhibit function
- Power on soft start
- 200 kHz operation for low ripple and fast response time
- RAD hard, 10⁵ total dose
- Built-in EMI input filter meets MIL-STD 461C requirements CEO3, CEO7, CS01, CS02 and CS06
- Short circuit and overvoltage protection with externally selectable wiring option which yields latching/non-latching option
- Non-latching reset interval is externally programmable by choosing a capacitor to select the time constant.
- Capability of external synch for switching frequencies
- Built-in test capability with T²L interface
- "S" level configuration available

Specifications

INPUT: 270 VDC nominal

Range: 200 VDC to 335 VDC continuous

Survives 475 V transients

OUTPUT: Voltage & Current (see chart)

REGULATION: (see chart)

RIPPLE: 50 mV peak-to-peak, typical

ISOLATION:

Input to case: 500 VDC

Input to output: 500 VDC*

(* inputs shorted to case, outputs shorted together)

ENVIRONMENT:

Full power from -55°C to +85°C T_{case}

Linearly derates to zero from 85°C to 115°C

Storage temperature: -55°C to +150°C

Shock: 50G

Acceleration: 500G

Vibration: 30G

WEIGHT: 35 grams

DIMENSIONS: 2.12" x 1.11" x 0.375"

(without flange)

SINGLE OUTPUT DEVICES										
PARAMETER	CONDITION	3020R-S03.3 (6.5W)			3020R-S05 (6.5W)			3020R-S05.2 (6.5W)		
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output Voltage	—	+3.2	+3.3	+3.4	+4.9	+5.0	+5.1	-5.1	-5.2	-5.3
Output Current	V _i = 200-335 VDC	—	—	1.97 A	—	—	1.3 A	—	—	1.25 A
Efficiency	P _o = Max Rated Load	65%	69%	—	72%	75%	—	72%	75%	—
Line Regulation	P _o = Max Rated Load V _i = 200-335 VDC	—	7 mV	20 mV	—	7 mV	20 mV	—	10 mV	20 mV
Load Regulation	P _o = 0-6.5 W	—	5 mV	20 mV	—	5 mV	20 mV	—	10 mV	20 mV
Output Ripple	Full Load BW 2 MHz mV _{r_{pp}}	—	30	50	—	30	50	—	30	65

SINGLE OUTPUT DEVICES										
PARAMETER	CONDITION	3020R-S12 (6.5W)			3020R-S15 (6.5W)			3020R-S28 (6.5W)		
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output Voltage	—	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1	+27.8	+28.0	+28.2
Output Current	V _{in} = 200–335 VDC	—	—	541 mA	—	—	433 mA	—	—	232 mA
Efficiency	P _{out} = Max Rated Load	80%	82%	—	81%	83%	—	82%	84%	—
Line Regulation	P _{out} = Max Rated Load V _{in} = 200–335 VDC	—	10 mV	20 mV	—	10 mV	20 mV	—	10 mV	20 mV
Load Regulation	P _{out} = 0–6.5 W	—	10 mV	20 mV	—	10 mV	20 mV	—	10 mV	20 mV
Output Ripple	Full Load BW 2 MHz mV _{rms}	—	30	65	—	30	65	—	30	65

DUAL OUTPUT DEVICES										
PARAMETER	CONDITION	3020R-D05 (5W)			3020R-D12 (6.5W)			3020R-D15 (6.5W)		
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output Voltage	$+I_1 = -I_2$	+4.9	+5.0	+5.1	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1
	$-I_1 = +I_2$	-4.9	-5.0	-5.1	-11.9	-12.0	-12.1	-14.9	-15.0	-15.1
Output Current*	$V_{in} = 200-335$ VDC	35 mA	—	500 mA	40 mA	—	270 mA	32 mA	—	217 mA
Efficiency	$P_{out} = \text{Max Rated Load}$	72%	75%	—	81%	84%	—	82%	85%	—
Line Regulation	$P_{out} = \text{Max Rated Load}$ $V_{in} = 200-335$ VDC	—	10 mV	25 mV	—	10 mV	25 mV	—	10 mV	25 mV
Load Regulation	$P_{out} = 5-5$ or $.65-8.5$ W	—	20 mV	50 mV	—	20 mV	50 mV	—	20 mV	50 mV
Output Ripple	Full Load BW 2 MHz mV.	—	50	85	—	50	85	—	50	85

Notes: * Up to 90% full power available from either output if rated output power is not exceeded; † Balanced load conditions.

TRIPLE OUTPUT DEVICES									
PARAMETER	CONDITION		3020R-T12 (4W)			3020R-T15 (4W)			
			MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage	$+I_{L1} - I_{L2}$	MAIN	+4.9	+5.0	+5.1	+4.9	+5.0	+5.1	
		DUAL	+11.9	+12.0	+12.1	+14.9	+15.0	+15.1	
		DUAL	-11.9	-12.0	-12.1	-14.9	-15.0	-15.1	
Output Current	$V_{in} = 200-335$ VDC	MAIN	60 mA	—	500 mA	60 mA	—	500 mA	
		DUAL	—	—	±105 mA	17 mA	—	±83 mA	
Efficiency	$P_{out} =$ Max Rated Load		68%	70%	—	68%	70%	—	
Line Regulation	$P_{out} =$ Max Rated Load $V_{in} = 200-335$ VDC	MAIN	—	0.1%	0.2%	—	0.1%	0.2%	
		DUAL	—	0.25%	0.4%	—	0.25%	0.4%	
Load Regulation	$P_{out} = 4-4$ W	MAIN	—	0.2%	0.4%	—	0.2%	0.4%	
		DUAL	—	0.25%	0.4%	—	0.25%	0.4%	
Output Ripple	Full Load BW 2 MHz	MAIN	—	—	80	—	—	80	
		DUAL	—	—	30	—	—	30	

We can modify these units to meet your custom converter requirements.

MODULAR DEVICES INC

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